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10/781,521	02/18/2004	Zica Valsan	282735US8X	3002

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EXAMINER	
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ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/781,521	VALSAN ET AL.	
	Examiner	Art Unit	
	Douglas C. Godbold	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20040218*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to application 10/781,521 filed February 18, 2004. Claims 1-11 are pending in the application and have been examined. The preliminary amendments to the claims file February 18, 2004, have been considered.

Priority

2. This action claims priority to European Application 03/003876.4 filed February 20, 2003. This date has been considered in the office action.

Information Disclosure Statement

3. The information disclosure statement filed on February 18, 2004 has been considered in this office action.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Content of Specification

(a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).

(e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

(f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the

invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

(k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

(l) Sequence Listing, See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

5. The disclosure is objected to because of the following informalities: The disclosure does not contain the labeled sections listed above.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> **Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.**

7. Claims 10-11 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 10 attempts to claim a computer program product. However, this can be interpreted as mere computer listing. Computer listings are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of the computer, which permit the computer program's functionality to be realized. Claim 11 attempts to be a compute readable storage medium. However, this can be interpreted as an electro magnetic wave, which is not statutory subject matter. Therefore, claims 10 and 11 are rejected under 35 U.S.C. 101.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 2 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US PAP 2002/0087315).

12. Consider claim 1, Lee teaches a method for recognizing speech (figure 2), comprising the steps of:

receiving a speech input (step 62, receive user request),

generating a set of ordered hypotheses, wherein each hypothesis contains at least one hypothesis word (perform initial word recognition 63. Process block 64 selects the model from the multiple language models that most probably match the context of the user's request, paragraph 0017.),

generating attribute information for at least one of said at least one hypothesis word, the attribute information being generated to be descriptive for syntactic and/or semantic information and/or the like of a respective hypothesis word (Syntactic-semantic parser is used to determine the likelihood of word given the topical dictionary being used, paragraph 0019. Also, figure 9, detail of multi scan control 32, shows the semantic feature of the recognized words is represented as attribute-and-value matrices. These include semantic category, syntactic category, application-relevancy, topic-indicator, etc; paragraph 0034.),

using a language model which is based on said attribute information to calculate word probabilities for said at least one of said at least one hypothesis word (Process block 66 scans the user input again using the selected lower-level language model of process block 74. Process block 68 scans the user input with the recognition assisting databases to increase or decrease the recognition probabilities of the words that were recognized during the scan of process block 66; paragraph 0020.), which word probabilities are descriptive for the posterior probabilities of the respective hypothesis word given a plurality of previous hypothesis words (Figure 9, decision layer 51. If two words W1 and W2 are recognized, 51, W1 being correct and W2 being wrong, when matching a conceptual pattern of a correct sub-model (i.e., the first category "C1" sub-

model), W1 will have a high semantic score and at the same time W2 will have a high phonetic score as its phonetic and the acoustic feature will match up a word which is misrecognized. On the other hand, when matching a conceptual pattern from a wrong sub-model (i.e., C2), the semantic score of W1 as well as its phonetic score will all be low, as there is unlikely a word in the wrong pattern having similar pronunciation to it. To further illustrate this point, imagine the user says "I want a Lexmark printer" and the recognizer gives "I want a Lexus printer". Now imagine two contending sub-models are tried. The C1 sub-model contains words like "I want a Lexmark printer" the second one (C2 sub-model) contains words like "I want a Lexus car". The C1 sub-model has a significantly higher chance of being selected if both semantic and phonetic information are jointly used. The joint information of semantic and phonetic features is also used to partition large word sets within a conceptual sub-model into further phonetic sub-models; paragraph 0034),

using said word probabilities for generating a set of re-ordered hypotheses (Process block 68 scans the user input with the recognition assisting databases to increase or decrease the recognition probabilities of the words that were recognized during the scan of process block 66; paragraph 0020. Increasing and decreasing recognition probabilities of words is in effect reordering them based on their probability.),

choosing at least one best hypothesis from said set of re-ordered hypotheses as a recognition result (in a model based on probability of recognition, it is inherent that the word with the highest probability will be chosen as the correct output.),

outputting said recognition result (output recognized words 76.).

13. Consider claim 2, Lee teaches the method according to claim 1, characterized by generating said attribute information for a combination of hypothesis words, wherein the attribute information is descriptive for syntactic and/or semantic information and/or the like of the combination of hypothesis words (Figure 9, detail of multi scan control 32, shows the semantic feature of the recognized words is represented as attribute-and-value matrices. These include semantic category, syntactic category, application-relevancy, topic-indicator, etc; paragraph 0034.).

14. Consider claim 3, Lee teaches the method according to claim 1, characterized in that said word probabilities are determined using a trainable probability estimator, in particular an artificial neural network (The semantic feature of the recognized words is represented as attribute-and-value matrices. These include semantic category, syntactic category, application-relevancy, topic-indicator, etc. This representation is then fed into a multi-layer perceptron-based neural network decision layer 51, which has been trained by the learning module 52 to map feature structures to sub-language models 36, paragraph 0034.).

15. Consider claim 4, Lee teaches the method according to claim 3, characterized in that said artificial neural network is a time delay neural network, a recurrent neural network or a multilayer perceptron network (This representation is then fed into a multi-

layer perceptron-based neural network decision layer 51, which has been trained by the learning module 52 to map feature structures to sub-language models 36, paragraph 0034.).

16. Consider claim 5, Lee teaches the method according to claim 3, characterized by generating a feature vector that is used as input for said trainable probability estimator, which feature vector contains coded attribute information (The semantic feature of the recognized words is represented as attribute-and-value matrices. These include semantic category, syntactic category, application-relevancy, topic-indicator, etc. This representation is then fed into a multi-layer perceptron-based neural network decision layer 51, which has been trained by the learning module 52 to map feature structures to sub-language models 36, paragraph 0034.).

17. Consider claim 6, Lee teaches the method according to claim 5, characterized by applying a method for dimensionality reduction to the feature vector (Paragraph 0027 demonstrates how a language models associated with a word is narrowed down based on semantic analysis of the recognized words, such eliminating words associated with printers not relevant to the inkjet printer that is recognized, such as laser or dot matrix related terms. Only concepts related to the recognized words are kept.).

18. Consider claim 7, Lee teaches the method according to claim 6, characterized in that said method for dimensionality reduction is based on principal component analysis,

latent semantic indexing, and/or random mapping projection (Paragraph 0027 demonstrates how a language models associated with a word is narrowed down based on semantic analysis of the recognized words, such eliminating words associated with printers not relevant to the inkjet printer that is recognized, such as laser or dot matrix related terms. Only concepts related to the recognized words are kept.).

19. Consider claim 8, Lee teaches the method according to claim 1, characterized in that a standard language model is applied additionally to said language model (The first language model as terms that for a general category; paragraph 0003.).

20. Consider claim 9, Lee teaches a speech processing system, which is capable of performing or realizing a method for recognizing speech according to claim 1 and/or the steps thereof (figure 1 is the system for the method of figure 2. Figure 9 shows in detail multi scan control 32.)

21. Consider claim 10, Lee teaches a computer program product, comprising computer program means adapted to perform and/or to realize the method of recognizing speech according to claim 1 and/or the steps thereof, when it is executed on a computer, a digital signal processing means, and/or the like (claim 1 specifies a computer implemented method. Therefore a computer program product is inherent.)

22. Consider claim 11, Lee teaches a computer readable storage medium, comprising a computer program product according to claim 10 (a computer readable storage medium is inherent in order to make the computer program product useable.).

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is listed on the notice of references cited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas C. Godbold whose telephone number is (571) 270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG

PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER